Activity: Let's go back to one of our examples from yesterday.

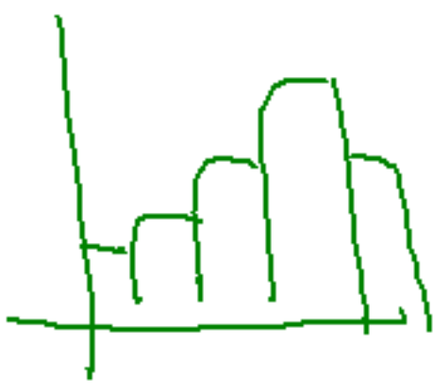
Computer chips have a ~~25%~~ 0.80 chance of being defective. X is the # of defective chips in a sample of 4.

Probability Distribution from yesterday

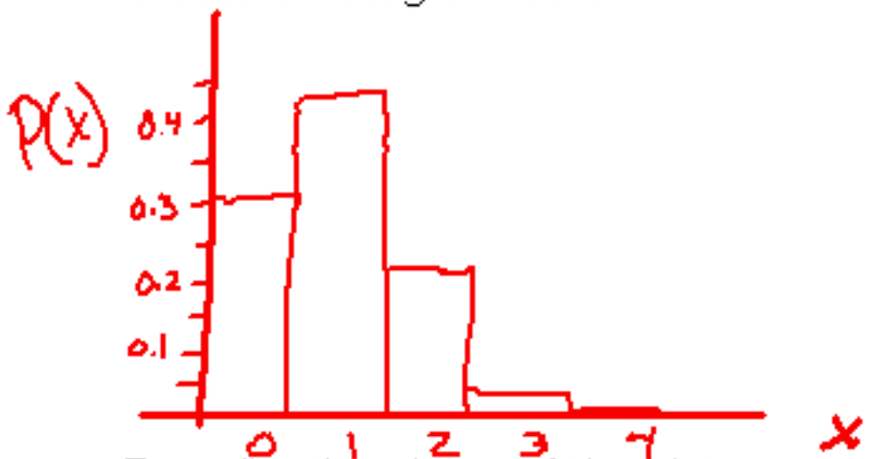
X	P(X)
0	0.3164
1	0.4219
2	0.2109
3	0.0469
4	0.0039

n = 4

p = 0.80



Create a histogram here:



Describe the shape of the histogram:

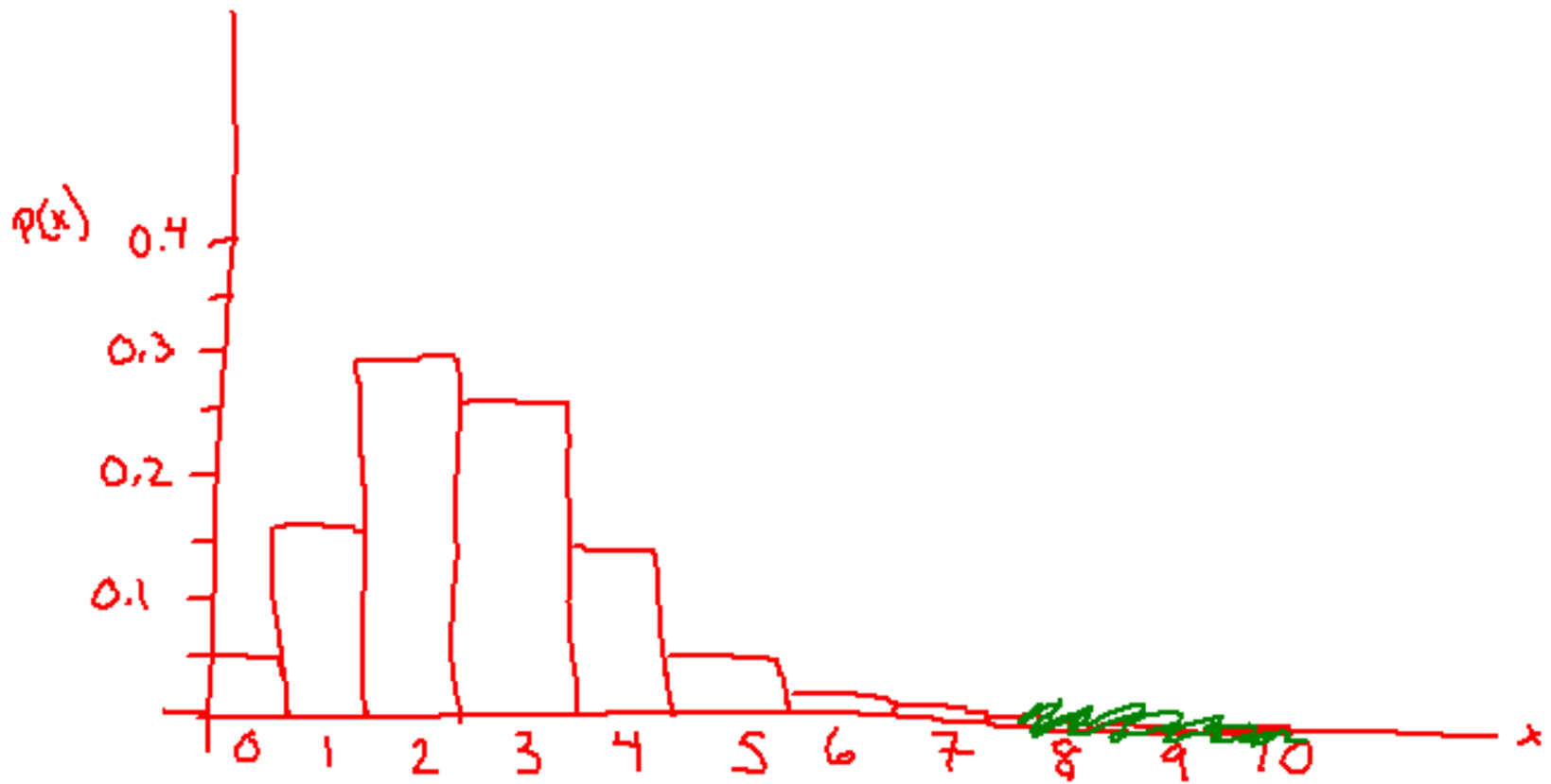
strong rt. skew

Now let's change the sample size to 10. Create the distribution, then the histogram.

Distribution:

X	P(X)
0	0.0563
1	0.1877
2	0.2816
3	0.2503
4	0.1460
5	0.0584
6	0.0162
7	0.0031
8	0.00039
9	0.000029
10	0.00000095

Histogram:



Describe the shape of the histogram:

Slight rt. Skew

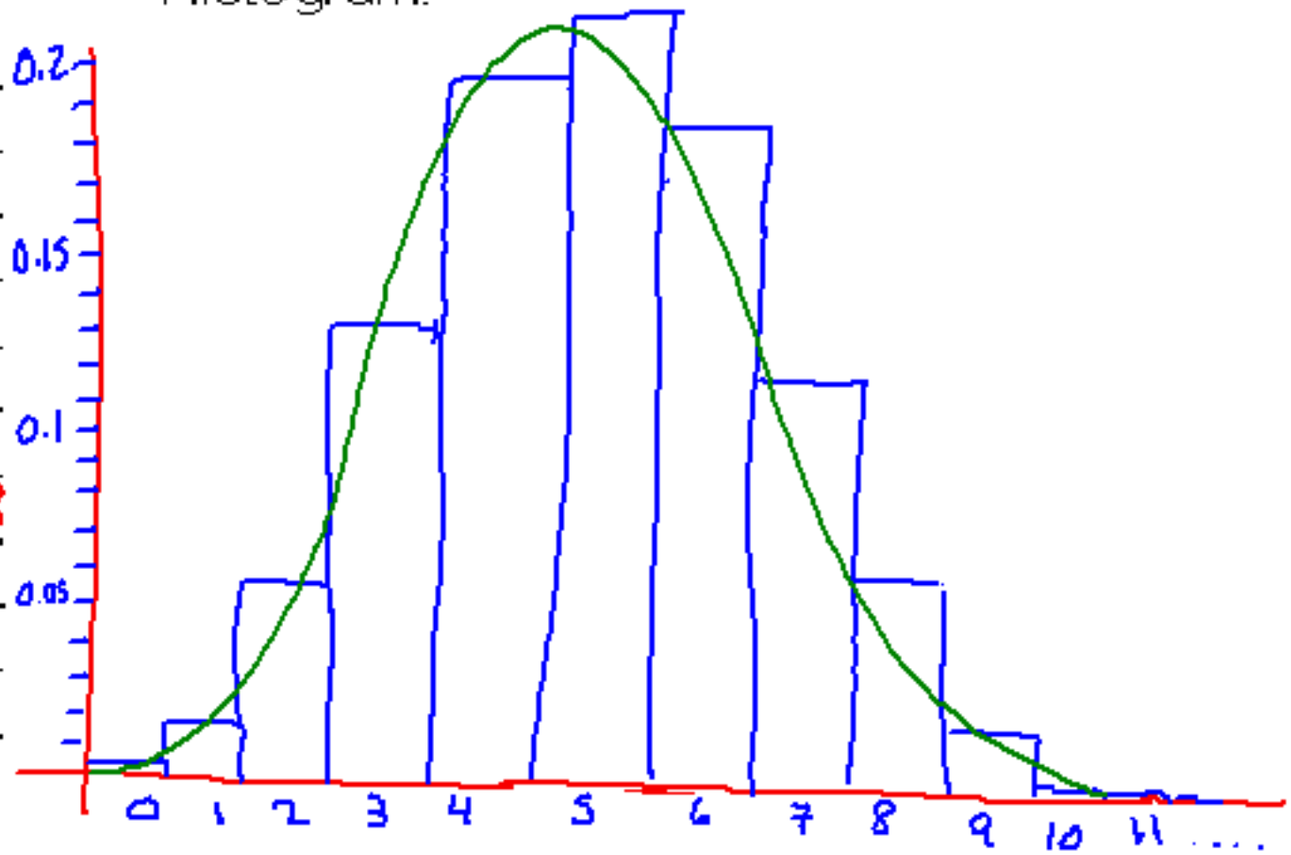
Now let's change the sample size to 20. Create the distribution, then the histogram. binompdf(20, 0.25, X)

Distribution:

X	P(X)
0	0.0032
1	0.0211
2	0.0669
3	0.1339
4	0.1897
5	0.2023
6	0.1686
7	0.1124
8	0.0609
9	0.0271
10	0.0099
11	0.003
12	0.00075
13	0.00015
14	0.000026
15	0.0000034
16	0.00000036
17	0.000000028
18	1.56×10^{-9}
19	5.46×10^{-11}
20	9.09×10^{-13}

n = 20

Histogram:



Describe the shape:

~ normal

roughly symm

What do you notice about the shape of the distribution as the sample size increases? more normal

within

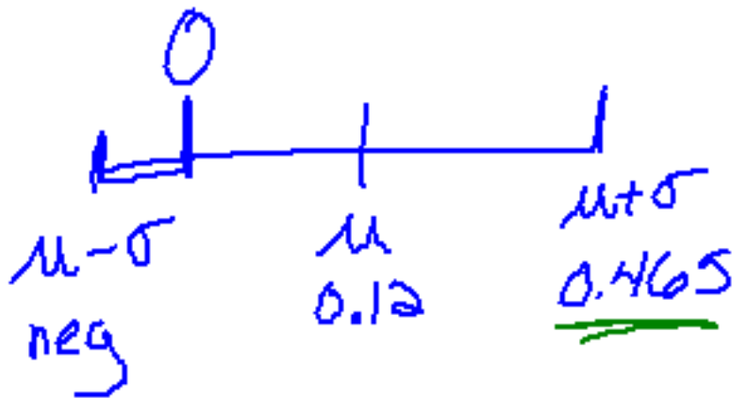
7b)

B(12, 0.01)

1σ:

$P(0 \le X \le 0)$

$P(X=0) = 0.8864$



2σ

$P(0 \le X \le 0)$

$P(X=0) = 0.8864$

3σ

$P(0 \le X < 1)$

$P(X=0) + P(X=1) = 0.9935$

$P(X \le 1)$